

its track may be considered doubtful and farther north than as shown on chart. *South Pacific Ocean*.—Ship David Crockett, from New York to San Francisco, reports "passed Cape Horn May 28th, 1879, and took fearful gale from W. to SW., lasting 12 days, with fearful squalls of hail and snow and fearful high sea, and on June 9th had drifted back to Cape St. John, Staten Island; sustained considerable damage to rigging and did not get past Cape Horn the second time, until June 11th." Ship Ellen Sharp, from Melbourne at San Francisco, August 7th, reports "lost topsails, &c., in hurricane June 16th, 1879." Bark B. L., from San Francisco, put into Auckland June 11th, 1879, with pumps choked, and sailed thence for Lyttleton, N. Z., on the 14th; was wrecked at Timaru, New Zealand, June 29th, at 11 p. m., during heavy SE. gale; "the master was not able to get any observations for 3 days previous;" a tug was dispatched from Christ Church, but could not reach wreck on account of tremendous sea. Ship Frank Pendleton, from San Francisco at Deal, England August 7th; shipped heavy seas off Cape Horn during which two of her crew were drowned. *Indian Ocean*.—Ship Victoria Cross, encountered stormy weather May 21st, 1879, in lat., 43°S, 61°E; sea broke over vessel, started deck house and damaged boats. Barque Caroline, June 11th and 12th, 1879, in 30° to 31° S. and 57° to 58° E. had a terrific gale from N. to WNW., with hard squalls, heavy rain, and a high sea—barometer 29.50. At Mauritius on the 11th, it was "getting gloomy at SSE'd" and on the 12th the pressure fell to 29.98 with a westerly wind and light rain. *Bay of Bengal*.—On chart No. IV is shown the track of a slight depression which probably moved northward over northern India, from May 30th to June 6; it was accompanied by heavy rain (nearly 7.00 inches) at Cuttack on the 30th, and severe gale at Darjeeling on the 5th.

TEMPERATURE OF THE AIR.

The isothermal lines upon Chart No. II., show the general distribution of the temperature for August 1879. By reference to the table of average temperatures given on the same chart, it will be seen that there has been a general deficiency as compared, with the means for many years, in all districts east of the Rocky Mountain slope, except Florida, which shows a normal temperature, and the northern Rocky Mountain slope, which shows a slight excess. The greatest deficiencies are reported from the Gulf States, especially Texas, Tennessee and the Ohio valley and the New England States. The smallest from the Lake region, Lower Missouri valley, and Middle Eastern Rocky Mountain slope. An excess is reported from the plateau districts and the Pacific coast, except at San Diego, where it is normal.

Maxima and Minima Temperatures.—Upon charting the maxima temperatures of the month it appears that throughout the country generally, the range was from 90° to 99°. At isolated stations on the Atlantic coast from Maine to North Carolina and in the Lake region, maxima temperatures ranging from 81° to 89° were reported. The lowest maximum on the Atlantic coast was 81° at Cape Lookout, and in the Lake region 82° at Buffalo. The lowest maximum on the Pacific coast was 81° at San Diego. The line of maxima temperatures of 100° and above confines within its limits all of Texas except the coast stations, the southern half of Arizona and the interior of California. The highest reported temperature during the month from the Signal Service stations was 115° at Yuma, Arizona.

Upon charting the minima temperatures for the month it is found that, excepting at the elevated stations, but one station—Marquette, 37°—reported a minimum temperature of less than 40°. The area of from 40° to 50° included the interior portion of New England, excepting isolated southern stations, the northern portion of the Upper Mississippi valley, the Northwest and Northern Rocky Mountain Slope. The area from 60° to 70° comprises within its limits the Middle Atlantic States, Virginia, the interior of North Carolina, Tennessee and the Ohio valley, Central Mississippi valley, the Lower Missouri valley, Nebraska and Indian Territory, portions of Texas and Arizona and California. The only minima temperatures above 70°, yet reported, are 71° at Galveston and Indianola, and 72° at Tucson, Arizona.

Minima and Maxima Temperatures are respectively as follows: *Maine*: 43° at *Orono, 49° at Eastport and 93° at Portland. *Vermont*: 43° at *Luenburg, 45° and 90° at Burlington and 97° at *West Charlotte. *Massachusetts*: 46° at *Springfield Armory and 51° at Thatcher's Island, 94° at Boston and 100° at *Somerset. *Rhode Island*: 55° and 87° at Newport. *Connecticut*: 49° to 89° at New Haven and 97° at *Mystic. *New York*: 42° at *Waterburg, 48° at Rochester, 90° at New York City, and 98° at *Starkey. *Pennsylvania*: 38° at *Franklin, 50° at Pittsburgh, 93° at Philadelphia, and 97° at *Chambersburg. *Delaware*: 60° and 90° at *Dover. *Maryland*: 50° at *Woodstock, 56° and 92° at Baltimore. *District of Columbia*: 55° and 96° at Washington. *Virginia*: 45° at *Snowville, 57° and 95° at Lynchburg. *West Virginia*: 51° and 85° at Morgantown. *North Carolina*: 46° at *Highlands, 56° at Charlotte, 98° at Wilmington and Weldon. *South Carolina*: 60° at *Spartanburg, 62° and 95° at Charleston. *Georgia*: 56° at McPherson Barracks, 64° at Augusta and 97° at Savannah. *Florida*: 62° at *Ft. Barrancas, 65° and 91° at St. Marks and 102° at *Houston. *Alabama*: 59° at *Wilsonville, 37° and 94° at Mobile. *Mississippi*: 62° at *Fayette, 62° and 97° at Vicksburg. *Louisiana*: 61° and 96° at Shreveport and 98° at *Pt. Pleasant. *Texas*: 48° at Fort Davis and 105° at Pilot Point. *Ohio*: 44° at *Westerville and *Urbana, 56° and 96° at Cincinnati. *Kentucky*: 57° and 96° at Louisville. *Tennessee*: 50° at Knoxville and 96° at Nashville. *Arkansas*: 61° and 96° at Little Rock. *Michigan*: 34° at *Lansing, 37° at Marquette and 96° at *Lansing and Marquette. *Indiana*: 46° at *Wabash, 53° and 93° at Indianapolis and 95° at *Logansport. *Illinois*: 45° at *Riley, 52° and 91° at Chicago and 100° at *Louisville. *Missouri*: 47° and 100° at *Kansas City, 55° and 99° at St. Louis. *Kansas*: 49° at *Lawrence, 55° and 95° at Dodge

City and 103° at *Holton and *Wellington. *Wisconsin*: 40° at *Neillsville, 48° and 90° at La Crosse and 95° at *Manitowoc. *Iowa*: 42° at Ames and Guttenburg, 48° and 93° at Des Moines and 100° at *Boonsboro. *Nebraska*: 36° at *Sidney Barracks, 46° at North Platte, 99° at North Platte and *Sidney Barracks. *Indian Territory*: 56° at Ft. Sill and 104° at Ft. Gibson. *Minnesota*: 44° and 92° at Breckenridge, 96° at *Ft. Snelling. *Dakota*: 41° and 98° at Ft. Buford. *Colorado*: 23° at Pike's Peak, 32° at *Georgetown, 50° and 95° at Denver. *New Mexico*: 48° at Silver City and 104° at La Mesilla. *Wyoming*: 40° and 92° at Cheyenne. *Montana*: 40° and 97° at Ft. Keogh. *Utah*: 46° and 95° at Salt Lake City, 102° at *Kanab. *Nevada*: 45° and 96° at Pioche, 100° at Carson City. *Arizona*: 42° at Prescott, 115° at Yuma. *Idaho*: 46° and 103° at Boise City. *California*: 34° at Campo, 48° at Visalia and 108° at Visalia and Red Bluff, and 121° at *Indio. *Oregon*: 45° and 92° at Roseburg.

Those marked with * are voluntary reports.

Ranges of Temperatures at Signal Service Stations.—The monthly ranges will appear from an examination of the maxima and minima just given. The greatest daily ranges vary in New England from 15° at Wood's Holl, and 26° at Mt. Washington to 30° at Eastport and Springfield. Middle Atlantic States from 16° at Cape May to 26° at Washington. South Atlantic States 13° at Portsmouth, N. C., to 29° at Charleston. Gulf States from 15° at Galveston and New Orleans to 31° at Corsicana. Tennessee and Ohio valley from 20° at Cairo to 31° at Pittsburgh. Lower Lake region, from 21° at Buffalo to 30° at Rochester. Upper Lake region from 21° at Chicago to 34° at Marquette. Upper Mississippi valley from 23° at Davenport to 31° at Des Moines. Lower Missouri valley from 26° at Omaha to 34° at Yankton. Northwest from 39° at Bismarck to 42° at Pembina. Rocky Mountain slope from 24° at Pike's Peak and 27° at Denison and Henrietta to 44° at Santa Fe and 45° at Cheyenne. Rio Grande valley from 25° at Laredo and Rio Grande City to 36° at Brackettville. California, from 29° at San Francisco to 46° at Visalia.

Frost.—2nd Fort Buford; 5th and 15th, Lunenburg, Vt.; 8th and 16th, Cresco, Iowa; 8th, 16th and 17th, at Neillsville, Wis.; 8th, 16th and 24th, at Lansing, Mich.; 16th, cut corn and potatoes in Lansing and surrounding townships badly, and in Locke township killed corn, buckwheat, tomatoes, &c.; 9th (?) Palouse City, Washington Ty., killing vegetables, ice formed but damage not extensive. 9th, Embarrass, Wis., and Fort Stevenson, Dak.; 10th Litchfield and Catawissa, Pa.; 11th Cooperstown, N. Y.; 15th Ontonagon, Mich., "nipping tender vines;" 17th Thornville, Mich.; 29th Winnemucca, Nev., wilting potato and other vines; 30th Georgetown, Col., "water froze 100 feet above the town." Summit, Col., (elevation 11,300 feet) frost every night. 31st Virginia City, Montana.

Ice.—7th Mt. Washington, N. H., $\frac{1}{2}$ of an inch; 9th (?) Palouse City, Washington Ty., $\frac{1}{2}$ of an inch; 16th Locke township, Mich.; 30th near Georgetown, Col.

PRECIPITATION.

General Notes on Precipitation of Month.—The general distribution of rainfall for the month is illustrated as accurately as possible on chart No. III by returns from about 500 stations. In the lower left-hand corner of the chart will be found a table giving the average precipitation for August by districts. In general, the rainfall has been deficient from New England westward to the Rocky Mountains, and in California; in excess from the Middle and South Atlantic States westward to include the Lower Mississippi valley and Texas. The deficiencies were most marked in Minnesota and Missouri. The excess of precipitation has been greatest in the Eastern Gulf States, Ohio valley and the Middle Atlantic States. In the remaining districts, the departure from the normal rainfall has not been marked. None but local droughts have been reported. The deficiencies reported from Minnesota and the Missouri valley compensate for the excess of precipitation during July, while the great excess in the Ohio valley and Western Gulf States, counterbalance the marked deficiencies, which existed in those districts during the previous month.

Specially Heavy Rains.—1st, St. Marks, Fla., 6.41 in.; 2nd, Forsyth, Ga., 2.43 in. in 6 hours; Fort Barrancas, Fla., 2.73 in. in 3 hours 50 minutes; Franklin N. C., 5.90 in.; 3rd, Hudson, Mich., 2.20 in. in 8 hours; 4th, Accotink, Va., 1.40 in. in 9 hours; Morgantown, 2.31 in.; Gainesville, Ga., 3.60 in.; 5th, Keokuk, 2.11 in.; Augusta, Ill., 2.76 in.; Mt. Auburn, O., 2.33 in. in 1 hour 15 minutes; Cincinnati, 1.79 in. in 2 hours 45 minutes; 6th, Indianapolis, 2.05 in.; 7th, Woodstock, Md., 2.35 in. in 9 hours; Mt. Auburn, O., 2.27 in. in 6 hours; 9th, Portsmouth, N. C., 3.69 in.; Cape Lookout, 2.58 in. on the 8th and 9th; Point Pleasant, La., 3.02 in. in 1 hour; 10th, Gulf Hammock, Fla., 2.40 in. in 3 hours; 13th, New Orleans, 2.54 in.; Vevay, Ind., 1.90 in. in 30 minutes; Brookhaven, Miss., 4.50 in. in 13 hours; 14th, Mobile, 3.90 in.; Fort Barrancas, Fla., 6.07 in. in 3 hours and 35 minutes; 15th, Louisville, 2.86 in.; Sandusky, 2.70 in. on the 15 and 16th; Anna, Ill., 4.26 in. in 16 hours; Louisville, Ill., 14th and 15th, 2.50 in.; St. Meurads, Ind., 4.55 in. in 24 hours and 55 minutes; 16th, Erie, 3.11 in.; Rochester, N. Y., 2.65 in.; Oswego, N. Y., 3.14 in.; Cleveland, O., 2.59 in.; 17th, Highland, N. C., 2.00 in. in 8 hours; Fort Barrancas, Fla., 2.73 in.; Lynchburg, Va., 1.04 in.; Cape Lookout, N. C., 4.29 in. on the 17th, and 18th; 18th Atlantic City, N. J., 8.97 in., 6.72 in. in 9 hours; Sandy Hook, N. J., 6.38 in.; New London, Conn., 4.16 in.; New Haven, Conn., 5.12 in.; Norfolk, Va., 6.03 in., 5.13 in. in 9 hours; Wood's Holl, Mass., 2.27 in.; Wilmington, N. C., 8.04 in., 4.38 in. in 8 hours and 35 minutes; Thatcher's Island, Mass., 4.77 in., on the 18th, and 19th; Springfield, Mass., 4.36 in. on the 18th, and 19th; Cape May, N. J., 8.46 in., 6.85 in. in 9 hours; 19th, Mt. Washington, N. H., 2.60 in.; 20th, Fayetteville N. C., 3.50 in. in 1 hour; 21st, Fayetteville, N. C., 2.25 in. in 1½ hours; 22nd, Fort Barrancas, Fla., 3.35 in.; New Orleans, La., 2.11 in.; Mobile,